



# Student Exercise for Concept Attainment of the Elements, Compounds and Mixtures



## ««« By Dave Erb

Dave Erb is Chair of the STAO Communications Committee. He is interested in how STAO members can continue to share classroom-ready ideas in the most efficient manner.



### *Curriculum Connection: Grades 9 & 10 Chemistry*

Concept attainment exercises often use verbal or written forms of thought. The attached student exercise uses visual imagery to teach the concepts of Elements, Compounds and Mixtures at the atomic and molecular level. The recent emphasis on literacy all too often only refers to written or numeric forms. Yet how often, as science teachers, do we not start explaining various concepts by drawing rough pictures?

New technologies have made the use of visual imagery and animation much easier, yet the way I use this particular exercise is with the old-fashioned and technologically simplistic scissors and glue stick.

First, direct the students to cut out and group the images into three groups on the bottom of the table. Tell them to put the most complex on the left and the simplest on the right.

In order to speed up the process, I usually walk around the class as they are working and pull images out of groups that do not belong. As students perfect their groupings, ask them to glue the images in place on the provided table and fill in the top with explanations of why the images are grouped as they are.

When most are finished, I think you will find the concepts of Pure Substance vs. Mixture, Element vs. Compound, and Atom vs. Molecule are much easier to teach and are retained much better by the students.

I first found this idea in a profile for essential science but interestingly I've found it just as useful in the academic and applied courses.

## **References**

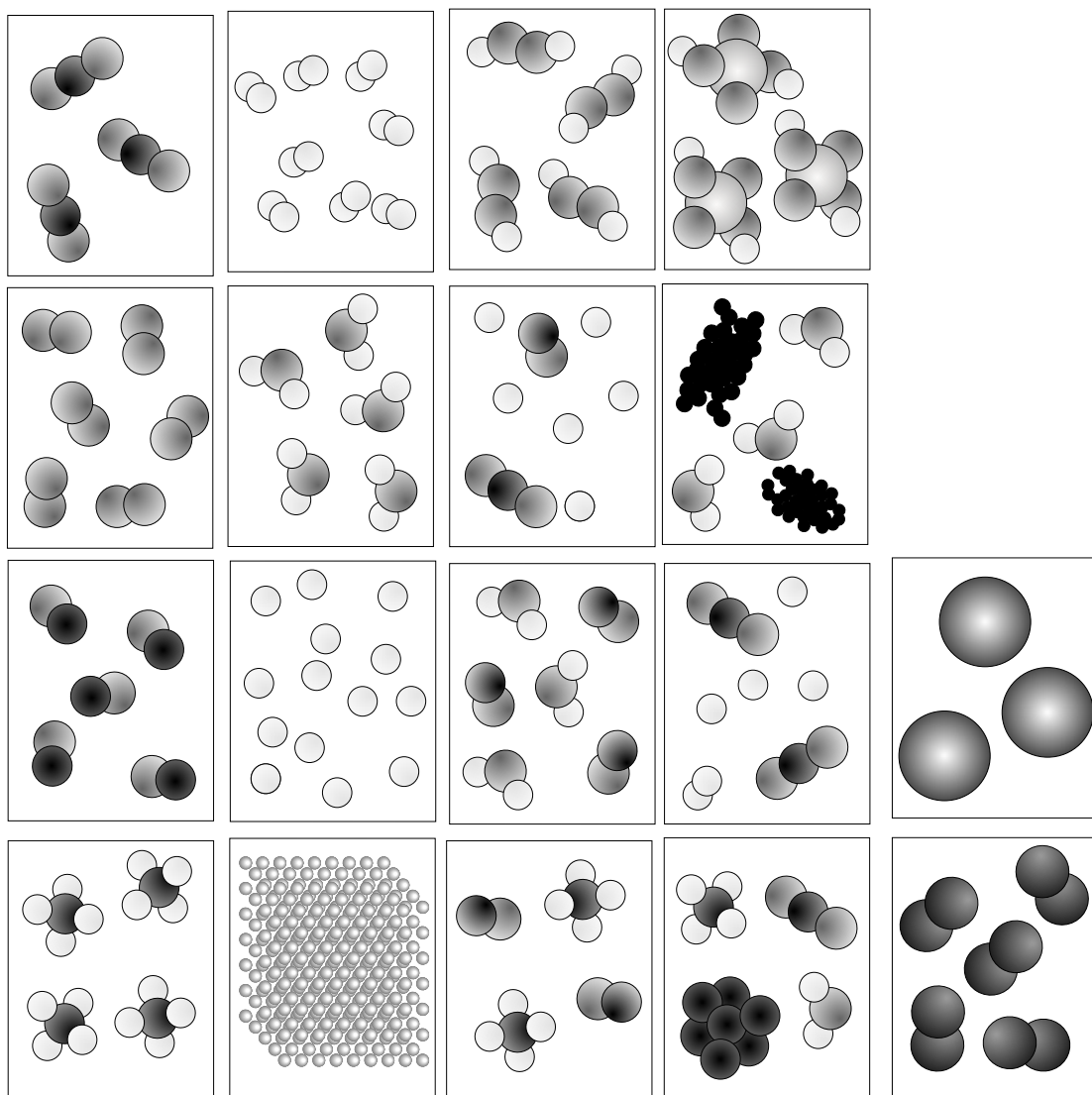
Course Profile (for a locally developed course) Essential Science Grade 9 available on the ministry's website at <http://www.edu.gov.on.ca>



*See next pages for student activity and diagrams.*

THE CLASSIFICATION OF MATTER

Cut out the pictures on the following page, and organize them as shown. What is the pattern?

# *Answer Page*

Cut out the pictures on the following page, and organize them as shown. What is the pattern?

<b>Pure Substance (made up of identical particles)</b>				
<b>Mixture (made up of different types of particles)</b>	<b>Compounds (molecules made up of more than one type of atom)</b>	<b>Elements (molecules made up of only one type of atom)</b>		
